



Published in final edited form as:

J Immigr Minor Health. 2014 December ; 16(6): 1130–1137. doi:10.1007/s10903-013-9893-6.

Physical and Mental Health Status of Iraqi Refugees Resettled in the United States

Eboni Taylor¹, Emad Yanni¹, Michael Guterbock¹, Clelia Pezzi², Erin Rothney³, Elizabeth Harton³, Jessica Montour⁴, Collin Elias⁵, and Heather Burke¹

¹US Centers for Disease Control and Prevention, Division of Global Migration and Quarantine, Atlanta, Georgia

²US Centers for Disease Control and Prevention, Division of Global Migration and Quarantine, San Diego, California

³US Centers for Disease Control and Prevention, Division of Global Migration and Quarantine, Detroit, Michigan

⁴Texas Department of State Health Services, Refugee Health Program, Austin, Texas

⁵Idaho Department of Health and Welfare, Refugee Health Screening Program, Boise, Idaho

Abstract

Background—We conducted a survey among Iraqi refugees resettled in the United States to assess their physical and mental health status and healthcare access and utilization following the initial eight month, post-arrival period.

Methods—We randomly selected Iraqi refugees: 18 years of age; living in the United States for 8 to 36 months; and residents of Michigan, California, Texas and Idaho. Participants completed a household questionnaire and mental health assessment.

Results—We distributed 366 surveys. Seventy-five percent of participants had health insurance at the time of the survey; 43% reported delaying or not seeking care for a medical problem in the past year. Sixty percent of participants reported one chronic condition; 37% reported 2 conditions. The prevalence of emotional distress, anxiety, and depression was approximately 50% of participants; 31% were at risk for post-traumatic stress disorder.

Conclusions—Iraqi refugees in this evaluation reported a high prevalence of chronic conditions and mental health symptoms despite relatively high access to healthcare. It is important for resettlement partners to be aware of the distinctive health concerns of this population to best address needs within this community.

Corresponding Author: Eboni M. Taylor, PhD, MPH, LCDR, United States Public Health Service, Epidemic Intelligence Service Officer, Immigrant, Refugee, and Migrant Health Branch, Division of Global Migration and Quarantine, Centers for Disease Control and Prevention, 1600 Clifton Rd, NE, Mail-stop E-03, Atlanta, GA 30333, Phone: (404) 639-4511, Fax: (404) 693-4441, etaylor1@cdc.gov.

Disclaimer: The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.

The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.

Background

Conflict in Iraq since 2003 has led to the largest refugee crisis in the Middle East in over 60 years [1], contributing to Iraqis becoming one of the world's largest refugee populations. An estimated 4.7 million Iraqis (approximately 15% of Iraq's population) have been displaced from their homes [2, 3]. A total of 18,016 Iraqi refugees arrived in the United States during fiscal year 2010, accounting for 25% of all refugees resettled to the United States during that period [4].

Before coming to the United States, all resettled refugees must complete a medical examination to identify individuals with communicable diseases of public health significance, including active tuberculosis, infectious syphilis, gonorrhea, infectious leprosy, chancroid, lymphogranuloma venereum, and granuloma inguinale [5]. Guidelines for the overseas medical examination are provided by the Division of Global Migration and Quarantine of the Centers for Disease Control and Prevention (CDC). CDC also recommends that newly arriving refugees receive a domestic medical examination within 90 days of their arrival [6].

Iraqi refugees tend to differ from other refugee groups entering the United States. Prior to their resettlement, most Iraqi refugees do not live in refugee camps but rather are dispersed in urban areas within Syria, Turkey, Lebanon, and Jordan [2, 7]. They have a demographic and health profile similar to that of middle income countries [2, 8, 9]. This group tends to be older, and likely suffers more from chronic illnesses like cardiovascular diseases (CVD), diabetes, and high lipid profile than from the communicable diseases and acute malnutrition that are more common in populations resettled from refugee camps in Asia or Africa [2, 7, 9].

Like most refugee groups, Iraqi refugees have experienced psychosocial trauma and the hardships of displacement [2]. Furthermore, many refugees from Iraq have lived through war and faced sustained trauma and socioeconomic stressors for a long period of time [10, 11]. The mental health assessment conducted as part of the resettlement process is not intended to diagnose mental health conditions, thus it is believed that the prevalence of these conditions is largely underestimated in resettling refugees.

The United States government provides resettled refugees with health insurance for the first eight months after they arrive in the country; after this 8-month period, refugees who do not qualify for Medicare or Medicaid must secure their own health insurance. One challenge facing state refugee health offices is losing contact with refugees after the eight months of government-provided health insurance ends. Information about how Iraqi refugees manage health conditions after their government-provided health insurance expires is not available. At the request of state health departments, CDC conducted a survey among Iraqi refugees resettled in the United States to assess their physical and mental health status and healthcare access and utilization following the initial 8-month, post-arrival period. The information gained from this evaluation will help resettling state plan programs and interventions for future arrivals.

Methods

Survey Population

Iraqi men and women 18 years of age and older who arrived in the United States as refugees, asylees, or on special immigrant visas (SIV) were recruited for the survey. Participants had to have been living in the United States between 8 and 36 months and had to be currently residing in one of the survey sites at the time of the survey. Michigan, California, and Texas were selected as survey sites based on resettlement figures from 2007 through 2010. The survey was piloted in Georgia and was later replicated in Idaho at the request of the state health department.

Participant Enrollment

We used a systematic sampling approach to recruit Iraqi refugees to complete a structured household questionnaire and mental health assessment. Local resettlement agencies provided the CDC project team with a list of potential participants who met our inclusion criteria; the lists did not contain any personally identifying information such as names or addresses. The agency lists were combined, and a random sample was drawn. The CDC team let the resettlement agencies know which participants were selected, and the agencies at each site contacted the selected participants and sought their approval to participate. Participants who agreed to participate were provided the locations, dates, and times at which to complete the questionnaire. Verbal consent was obtained from all participants, and each received a gift card as compensation for their time. The protocol underwent CDC human subjects review and was determined not to be research.

Data Collection

Participants completed a household questionnaire and a mental health assessment, both of which were self-administered and available in English and Arabic. The household questionnaire was developed by the CDC project team and included questions related to socio-demographic characteristics, health status, healthcare utilization, chronic and infectious disease history, and smoking status. Mental health was evaluated using the Hopkins Symptom Checklist (HSCL-25), a 25-item, self-administered assessment to identify symptoms of anxiety and/or depression [12]. For each item, participants were asked to choose the most appropriate response (“Not at all,” “A little,” “Quite a bit,” and “Extremely,” rated 1 to 4, respectively). Two scores were calculated: the emotional distress score was the average of all 25 items, while the depression score was the average of the 15 depression items. We used the standard cutoff point of 1.75; participants with emotional distress or depression scores ≥ 1.75 were categorized as “positive” [12–14]. Since the HSCL-25 standard cutoff points have not been validated for use in an Iraqi refugee population, we also used an algorithm to replicate the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria for major depression [15, 16].

We used the Primary Care Post-Traumatic Stress Disorder Screen (PC-PTSD) to assess PTSD symptoms. The PC-PTSD is a 4-item tool designed to screen for PTSD in primary care clinics with limited resources and is currently used by the Department of Veterans Affairs [17]. The PC-PTSD tool includes an introductory sentence to cue participants to

traumatic events followed by four questions. Answering “yes” to any three questions indicates that the participant is at risk for PTSD.

Data Analysis

We estimated a minimum sample of 345 Iraqi refugees would be needed to estimate the mental health and chronic disease prevalence with a precision of $\pm 5.0\%$ and 80% power. We increased the estimated sample size by 30% (N=450) to account for non-response. Sample characteristics were generated using frequencies and descriptive statistics. We calculated the prevalence of chronic health conditions, emotional distress, depression, and PTSD symptoms. Because we had common outcomes, we used log-binomial regression to calculate prevalence ratios (PR) and 95% confidence intervals (95% CI) to examine associations between demographic and health characteristics and depression using the DSM-IV algorithm. No mathematical correction was made for multiple comparisons. We used SAS version 9.3 to perform statistical analyses.

Results

Demographic Characteristics

A total of 366 surveys were administered across the four survey sites (Table 1). A majority of participants were male (60%) and ranged in age from 18 to 84 years. Approximately 20% of participants were never married, and 55% had less than a high school education. At the time of the survey, 90% of participants had been living in the United States for one year or more.

At least one household member was employed at the time of the survey in 57% of households represented (Table 1). However, 67% of participants reported that they were not currently working, of which fewer than five percent were retired (data not shown). Women were more likely than men to be unemployed (86% vs. 54%, $p<0.0001$), and those with less than high school education were more likely than those who completed at least high school to be unemployed (74% vs. 57% $p=0.0007$). Overall, the most common reasons for not working included being sick and unable to work (33%) and the inability to find a job that did not require English (25%). Among unemployed men, the next most common reason for not working was lacking the physical ability to perform available jobs (9%), while for women, it was the need to stay at home to care for their children (10%).

Health Behaviors and Chronic Conditions

Participants were asked about health behaviors, if they had ever been diagnosed with certain medical conditions, and to rate their overall physical health (Table 2). Approximately 40% of participants reported a smoking history; 24% were current smokers while 16% were former smokers. Men were significantly more likely than women to report a smoking history (55% vs. 17%; $p<0.0001$) and to be current smokers (34% vs. 7%; $p<0.0001$). There were no significant differences in smoking status by age.

A majority (60%) of participants reported receiving the flu vaccine in the past 12 months, and immunization was more commonly reported by those with health insurance (66%) than

those without health insurance (40%) ($p<0.0001$). Because the participants were not familiar with immunizations they received during the resettlement process, we were unable to analyze whether the refugees had received other immunizations (MMR, chickenpox, hepatitis A and hepatitis B).

The most commonly self-reported chronic health conditions included high cholesterol (34%), hypertension (26%), overweight/obesity (17%), and diabetes (16%). Men were significantly more likely than women to report high cholesterol ($p=0.04$), while women were significantly more likely than men to report anemia ($p=0.02$) and being diagnosed as overweight or obese ($p=0.001$) (Table 2). We also examined the prevalence of chronic conditions by age. As expected, chronic disease prevalence generally increased with age. Among participants under 45 years of age, 20% reported hypertension, 10% diabetes, 23% high cholesterol, and 14% were overweight/obese (data not shown).

Overall, 60% of participants reported having at least one of the chronic conditions listed in the survey (Table 2) while 37% reported having at least two chronic conditions. When asked to rate their overall physical health, 63% of participants gave a negative rating (fair or poor). The number of chronic conditions reported was associated with the overall physical health rating. Compared to participants who reported no chronic conditions, those who reported two or more conditions were twice as likely to provide a negative health rating (PR: 2.0; 95% CI: 1.6, 2.4).

Healthcare Access and Utilization

A high proportion (75%) of participants reported being covered by health insurance at the time of the survey, of which 74% reported having Medicaid or some other state health assistance program. Participants who reported having been diagnosed with a chronic condition were significantly more likely to report current health insurance coverage than participants who did not have health insurance at the time of the survey (59% vs. 43%; $p=0.007$). Among the 84 participants who reported they were not currently covered by health insurance, 36 (42%) reported having one chronic health condition and 18 (21%) reported having two or more.

Overall, 88% of participants reported having a usual place at which they seek healthcare services, and having a usual place for healthcare was more common among participants with health insurance than participants without health insurance (77% vs. 15%; $p<0.0001$). The family clinic was reported as the usual place for healthcare most often for participants with and without health insurance (90% and 69%, respectively), followed by emergency room visit as the second usual place for healthcare (19% vs. 38%; $p=0.08$).

Despite reporting high insurance coverage, 43% of all participants reported needing care for a medical problem and delaying or not seeking treatment in the past 12 months. Participants without health insurance were more likely than participants with health insurance to report delaying healthcare (65% vs. 38%; $p<0.0001$). Not having money to pay was a common reason for delaying care among all participants, though participants without health insurance were more likely to indicate it as a reason for delaying care than were participants with health insurance ($p=0.01$). Other common reasons for delaying medical care among the 95

participants who had health insurance included having no interpreter (19%), no transportation (14%), and not knowing where to go (12%). There was no difference in overall physical health rating by health insurance coverage.

Mental Health

The prevalence of anxiety, depression, and emotional stress as estimated by the Hopkins Symptom Checklist-25 was approximately 50% (Table 2). The prevalence of depression estimated using the DSM-IV algorithm was 27%. About 31% of participants were identified as at risk for PTSD by the PC-PTSD screener (Table 2). There were no differences in mental health outcomes by health insurance status.

We examined crude and adjusted estimates from the log-binomial regression models examining relationships between demographic and health characteristics and reported depression. Age, time in the United States, marital status, employment status, physical health rating, and having one of the most commonly reported health conditions (hypertension, overweight/obese, or diabetes) were independently associated with reported depression. In the adjusted model, longer time in the United States, rating one's health as fair or poor, and having one of the most commonly reported health conditions remained statistically significant and were associated with an increased likelihood of reported depression.

Discussion

Half of the Iraqi refugees we surveyed reported chronic health conditions, emotional stress, and depression; one in three was at risk for PTSD. Time in the United States, self-reported chronic disease diagnosis, and self-rated physical health status were associated with an increased likelihood of reported depression. To our knowledge, this is the first multi-state assessment of mental and physical health status in resettled Iraqi refugees living in the United States.

We asked participants about 16 chronic conditions and found that 60% of our survey participants reported being diagnosed with at least one of the conditions listed. A recent evaluation of medical records of United States-bound Iraqi refugees screened in Jordan examined hypertension, diabetes, and obesity and found that 35% of their survey population had at least one of these conditions [9]. Similarly, 39% of the Iraqi refugees we surveyed reported being diagnosed with one of the three conditions. Regarding hypertension alone, our estimated prevalence of 26% was consistent with other reported estimates in Arab- and Chaldean-American populations [8, 18–21]. This estimate is slightly less than the estimated overall prevalence of hypertension among United States adults (31%) [22] and United States-bound Iraqi refugees screened by IOM in Jordan (33%) [9]. Our self-reported diabetes prevalence (16%) is slightly higher than that reported in previous studies of Arab- and Chaldean-Americans utilizing self-reported diabetes diagnoses (4.8–11.8%) and slightly less than estimates from studies that directly measured fasting glucose and glucose tolerance (18–33%)[19–21, 23–26]. In two of the studies that tested participants, roughly half of the individuals identified as having diabetes were previously undiagnosed [24, 26]. This may be

an indication that diabetes is underdiagnosed in the Arab-American population in the United States, highlighting the importance of proactive screening and early detection.

Reported smoking prevalence was higher in our survey population (26%) than that estimated among United States adults (19%) [27]. Our estimates of 34% among men and 7% among women were comparable to published estimates among men and women living in Iraq [28]. Although we found no association between smoking status and asthma in our survey populations, the high prevalence of smoking histories among Iraqis, particularly the men, likely increases the risk of smoking-associated diseases in this population. About 16% of our survey population identified as former smokers; however, our survey does not allow us to determine whether former smokers quit before or after arriving in the United States. Though Arab-Americans tend to have lower cessation rates compared to other racial/ethnic groups in the United States, their smoking rates are generally lower in the United States compared to the rates overseas, possibly due to the higher cost of tobacco products in the United States [29, 30].

In Jordan, the reported prevalence of depression and emotional distress using the HSCL-25 was 85% and 83%, respectively [31]. Conversely, half of our survey population met the Hopkins checklist criteria for depression or emotional distress. Using the DSM-IV algorithm, the estimated depression prevalence in our survey population decreased to 27%, compared to 16% estimated among Iraqis in Jordan [31]. As documented by studies in other populations [14–16, 31], researchers overestimate the magnitude of mental health problems when the standard cutoff point of 1.75 is used. Caution must be used when applying a cutoff point established in one cultural group to a different group. The algorithm approach may improve classification as it is more closely aligned with a clinical interview; however, there is no way to confirm whether the classification is clinically valid [13, 16].

In our analysis, time in the United States, having at least one chronic health condition, and rating one's health as 'fair' or 'poor' were significantly associated with an increased likelihood of depression. These results are similar to studies of mental health in Arab- and Iraqi-Americans that identified an association between reported poor health and disability and depression. Iraqi patients are more likely to be diagnosed with PTSD and more likely to have physical complaints compared with other Arab-American patients [10, 32–34]. Other factors linked to depression and PTSD in studies of Iraqi refugees and immigrants include exposure to wartime stressors such as violence, trauma, and displacement [10, 34].

Of participants who had ever been married, 21% reported their spouse was a close relative. The relatively high prevalence of consanguinity (marriage to a close relative) is an additional finding that has implications for the health of Iraqis resettled in the United States. Though we did not collect information on genetic and congenital disorders, marriage to a close relative may result in an increased risk of genetic disease, especially glucose-6-phosphate dehydrogenase deficiency and thalassemia [35, 36]. Health providers for this population should be aware of the tradition of intermarriage, inquire about the presence and degree of consanguinity, and be able to provide counseling information about risk and screening for genetic disorders [35, 37, 38].

Even though 77% of participants reported having insurance coverage, many also reported unmet healthcare needs, including 55% reporting delayed care in the past 12 months. In 2010, CDC estimated that 11% of American adults reported not receiving or delaying medical care in the past 12 months due to cost [39]. Considering only cost as a reason, the prevalence of delayed care in the past 12 months for our survey population was 33%. Though the majority of survey participants did have some form of health insurance, usually Medicaid, over a third of those with insurance admitted to delaying care within the last 12 months. The most common reasons for delaying care in this population were lack of funds to pay for treatment (26%), lack of interpretation (19%) or, paradoxically, lack of insurance (18%). Medicaid programs and the types of services covered vary by state and may not cover most dental or vision services for adults. This may partially explain why individuals with insurance cited lack of insurance and lack of funds as reasons for delaying care. Dental care is a significant health need for refugees who have often gone years without appropriate treatment and whose oral health status is generally worse than that of natives of their host nation [40, 41]. Delay of care because of lack of appropriate interpretation is a significant issue for this refugee population as well. In many areas, the demand for trained medical interpreters is greater than the available resources. Also, the need for the additional presence of an interpreter at medical appointments for sensitive health needs or mental health treatment may discourage Iraqis from seeking care.

Limitations

Our investigation is not without limitations. We found it extremely difficult to reach potential participants due to outdated contact information. Refugees are often mobile post-resettlement, moving either within their original resettlement city or to entirely new states, and their contact information frequently changes after the initial resettlement period, making it difficult to reach them even if they stay in the same area. The availability of current contact information for use during participant recruitment differed based on the services provided by our partner agencies; those agencies that provided longer-term job training and placement tended to have more current contact information compared to agencies whose services were limited to the initial resettlement period. Data collection was designed to accommodate individuals with work schedules, but selection bias may have been introduced if the refugees who completed the survey were less likely to be employed, particularly if they were less likely to be employed because of illness or disability. Further, because the CDC project team did not conduct the recruitment, we are unable to provide data on response rate or elaborate on characteristics of non-responders.

Additionally, all data, including information about chronic condition diagnoses, were self-reported and could not be validated. We attempted to minimize potential for bias by using a self-administered questionnaire and preserving confidentiality by not collecting any identifying information.

We are also limited by the tools utilized for the mental health assessment. The tools are designed for screening purposes and are not indicative of a clinical diagnosis. The 1.75 cutoff point typically used when coding the HSCL-25 has not been validated for use in the Iraqi refugee population. Additionally, trauma-specific questions were not included in our

assessment of PTSD. Thus, we can say that participants with positive results to the PTSD screener are likely at risk for PTSD and should receive a more in-depth assessment, but we cannot make conclusions regarding a PTSD diagnosis.

Conclusion

It is important for resettlement partners to be aware of the distinctive health concerns of this population in order to best address needs within this community. Resettlement partners and healthcare providers working with Iraqi refugees should be aware of the high prevalence of chronic diseases in this population, and should screen Iraqi refugees for risk factors associated with chronic disease. In addition, providers must address the need for mental health screening among this population of refugees, and should recognize that a broad array of factors contribute to mental health problems among Iraqis, including stressors introduced post-resettlement. Culturally appropriate methods of addressing health screening, prevention, and treatment should be adopted by providers to ensure that Iraqi clients are comfortable with seeking care and following up with treatment.

References

1. Devi S. Meeting the health needs of Iraqi refugees in Jordan. *Lancet*. 2007; 370(9602):1815–1816. [PubMed: 18064745]
2. Mowafi H, Spiegel P. The Iraqi Refugee Crisis. *JAMA*. 2008; 299(14):1713–1715. [PubMed: 18398084]
3. The United Nations High Commissioner for Refugees. Statistics on Displaced Iraqis Around the World. Geneva, Switzerland: 2007.
4. United States Department of State, United States Department of Homeland Security, and United States Department of Health and Human Services. Proposed Refugee Admissions for Fiscal Year 2012: Report to the Congress. 2011.
5. Centers for Disease Control and Prevention. U.S. Department of Health and Human Services. Medical Examination of Aliens— Removal of Human Immunodeficiency Virus (HIV) Infection From Definition of Communicable Disease of Public Health Significance. 2009.
6. Centers for Disease Control and Prevention. Guidelines for the US Domestic Medical Examination for Newly Arriving Refugees. 2012. [cited 2012 July 29]; Available from: <http://www.cdc.gov/immigrantrefugeehealth/guidelines/domestic/domestic-guidelines.html>
7. Margesson, R.; Sharp, JM.; Bruno, A. Iraqi Refugees and Internally Displaced Persons: A Deepening Humanitarian Crisis?. 2008. [cited 2012 July 29]; Available from: <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA486537>
8. Ramos M, Orozovich P, Moser K, Phares C, Stauffer W, Mitchell T. Health of Resettled Iraqi Refugees—San Diego County, California, October 2007–September 2009. *MMWR Morb Mortal Wkly Rep*. 2010; 59(49):1614–1618. [PubMed: 21160458]
9. Yanni EA, Naoum M, Odeh N, Han P, Coleman M, Burke H. The Health Profile and Chronic Diseases Comorbidities of US-Bound Iraqi Refugees Screened by the International Organization for Migration in Jordan: 2007–2009. *Journal of Immigrant and Minority Health*. 2012;1–9. [PubMed: 21590335]
10. Jamil H, Hakim-Larson J, Farrag M, Kafaji T, Jamil LH, Hammad A. Medical complaints among Iraqi American refugees with mental disorders. *Journal of Immigrant Health*. 2005; 7(3):145–152. [PubMed: 15900415]
11. Jamil H, Nassar-McMillan S, Lambert R, Wang Y, Ager J, Arnetz B. Pre-and post-displacement stressors and time of migration as related to self-rated health among Iraqi immigrants and refugees in Southeast Michigan. *Medicine, Conflict and Survival*. 2010; 26(3):207–222.

12. Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, Covi L. The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory. *Behavioral science*. 1974; 19(1):1–15. [PubMed: 4808738]
13. Mollica RF, Cardozo BL, Osofsky HJ, Raphael B, Ager A, Salama P. Mental health in complex emergencies. *Lancet*. 2004; 364(9450):2058–2067. [PubMed: 15582064]
14. Mollica RF, Wyshak G, de Marneffe D, Khuon F. Indochinese versions of the Hopkins Symptom Checklist-25: A screening instrument for the psychiatric care of refugees. *Am J Psychiatry*. 1987
15. Ichikawa M, Nakahara S, Wakai S. Cross-cultural use of the predetermined scale cutoff points in refugee health. *Soc Psychiatry Psychiatr Epidemiol*. 2006; 41:248–250. [PubMed: 16518569]
16. Mollica RF, McInnes K, Sarajlic N, Lavelle J, Sarajlic I, Massagli M. Disability Associated with Psychiatric Comorbidity and Health Status in Bosnian Refugees Living in Croatia. *JAMA*. 1999; 282(5):433–499. [PubMed: 10442658]
17. Prins A, Ouimette P, Kimerling R, Camerond RP, Hugelshofer DS, Shaw-Hegwer J, Thrailkill A, Gusman FD, Sheikh JL. The primary care PTSD screen (PC-PTSD): development and operating characteristics. *International Journal of Psychiatry in Clinical Practice*. 2004; 9(1):9–14.
18. Dallo FJ, James SA. Acculturation and blood pressure in a community-based sample of Chaldean-American women. *J Immigr Health*. 2000; 2(3):145–53. [PubMed: 16228747]
19. Dallo FJ, Borrell LN. Self-reported diabetes and hypertension among Arab Americans in the United States. *Ethn Dis*. 2006; 16(3):699–705. [PubMed: 16937607]
20. Jamil H, Fakhouri M, Dallo F, Templin T, Khoury R, Fakhouri H. Self-reported heart disease among Arab and Chaldean American women residing in southeast Michigan. *Ethn Dis*. 2008; 18(1):19–25. [PubMed: 18447094]
21. Jamil H, Dallo F, Fakhouri M, Templin T, Khoury R, Fakhouri H. The prevalence of self-reported chronic conditions among Arab, Chaldean, and African Americans in southeast Michigan. *Ethn Dis*. 2009; 19(3):293–300. [PubMed: 19769012]
22. Centers for Disease, C. and Prevention. Vital signs: prevalence, treatment, and control of hypertension--United States, 1999–2002 and 2005–2008. *MMWR Morb Mortal Wkly Rep*. 2011; 60(4):103–8. [PubMed: 21293325]
23. Jamil H, Fakhouri M, Dallo F, Templin T, Khoury R, Fakhouri H. Disparities in self-reported diabetes mellitus among Arab, Chaldean, and black Americans in Southeast Michigan. *J Immigr Minor Health*. 2008; 10(5):397–405. [PubMed: 18165934]
24. Jaber LA, Brown MB, Hammad A, Nowak SN, Zhu Q, Ghafoor A, Herman WH. Epidemiology of diabetes among Arab Americans. *Diabetes Care*. 2003; 26(2):308–13. [PubMed: 12547854]
25. Jaber LA, Slaughter RL, Grunberger G. Diabetes and related metabolic risk factors among Arab Americans. *Ann Pharmacother*. 1995; 29(6):573–6. [PubMed: 7663027]
26. Kridli SA, Herman WH, Brown MB, Fakhouri H, Jaber LA. The epidemiology of diabetes and its risk factors among Chaldean Americans. *Ethn Dis*. 2006; 16(2):351–6. [PubMed: 17682235]
27. Centers for Disease, C. and Prevention. Vital signs: current cigarette smoking among adults aged ≥ 18 years--United States, 2005–2010. *MMWR Morb Mortal Wkly Rep*. 2011; 60(35):1207–12. [PubMed: 21900875]
28. Organization, W.H. WHO report on the global tobacco epidemic, 2011: warning about the dangers of tobacco. World Health Organization; 2011.
29. El-Sayed A, Galea S. The Health of Arab-Americans Living in the United States: A Systematic Review of the Literature. *BMC Public Health*. 2009; 9(1):272. [PubMed: 19643005]
30. Jamil H, Templin T, Fakhouri M, Rice VH, Khoury R, Fakhouri H. Comparison of personal characteristics, tobacco use, and health states in Chaldean, Arab American, and non-Middle Eastern White adults. *J Immigr Minor Health*. 2009; 11(4):310–7. [PubMed: 18311586]
31. Johns Hopkins Bloomberg School of Public Health, United Nations Children's Fund, and W.H. Organization. The Health Status of the Iraqi Populaton in Jordan. 2009. [cited 2012 October 27]; Available from: http://www.unicef.org/jordan/jo_children_HealthStatusofIraqisinJordan2009en.pdf
32. Doocy S, Sirois A, Tileva M, Storey JD, Burnham G. Chronic disease and disability among Iraqi populations displaced in Jordan and Syria. *Int J Health Plann Manage*. 2012

33. Jamil H, Grzybowski M, Hakim-Larson J, Fakhouri M, Sahutoglu J, Khoury R, Fakhouri H. Factors associated with self-reported depression in Arab, Chaldean, and African Americans. *Ethn Dis.* 2008; 18(4):464–70. [PubMed: 19157251]
34. Jamil H, Hakim-Larson J, Farrag M, Kafaji T, Duqum I, Jamil LH. A retrospective study of Arab American mental health clients: Trauma and the Iraqi refugees. *Am J Orthopsychiatry.* 2002; 72(3):355–361. [PubMed: 15792047]
35. Al-Gazali L, Hamamy H, Al-Arrayad S. Genetic disorders in the Arab world. *BMJ.* 2006; 333(7573):831–834. [PubMed: 17053236]
36. Yanni EA, Copeland G, Onley R. Birth Defects and Genetic Disorders Among Arab Americans—Michigan, 1992–2003. *Journal of Immigrant and Minority Health.* 2010; 12(3):408–413. [PubMed: 18972209]
37. Al-Ani ZR. Association of consanguinity with congenital heart diseases in a teaching hospital in Western Iraq. *Saudi Med J.* 2010; 31(9):1021–7. [PubMed: 20844815]
38. Al-Ani ZR, Al-Haj SA, Al-Ani MM, Al-Dulaimy KM, Al-Maraie A, Al-Ubaidi B. Incidence, types, geographical distribution, and risk factors of congenital anomalies in Al-Ramadi Maternity and Children's Teaching Hospital, Western Iraq. *Saudi Med J.* 2012; 33(9):979–89. [PubMed: 22964810]
39. Centers for Disease Control and Prevention. Health, United States, 2011: With Special Feature on Socioeconomic Status and Health. 2011. [cited 2012 October 11]; Available from: [http://www.cdc.gov/nchs/data/11.pdf](http://www.cdc.gov/nchs/data/hus/11.pdf)
40. Davidson N, Skull S, Calache H, Murray SS, Chalmers J. Holes a plenty: oral health status a major issue for newly arrived refugees in Australia. *Aust Dent J.* 2006; 51(4):306–11. [PubMed: 17256304]
41. Cote S, Geltman P, Nunn M, Lituri K, Henshaw M, Garcia RI. Dental caries of refugee children compared with US children. *Pediatrics.* 2004; 114(6):e733–40. [PubMed: 15574605]

Table 1

Demographic Characteristics of Iraqi Refugee Survey Participants (N=366)

	N	%
Gender		
Male	218	60
Female	144	40
Age (years)		
18–29	68	19
30–44	141	40
45–59	106	30
60–74	30	9
75	4	1
Marital Status		
Single, never married	72	20
Currently married	254	70
Formerly married*	36	10
Close Relative to Spouse		
No	232	79
Yes	62	21
Highest Education Level Completed		
No school	16	4
Elementary school	76	21
Middle school	110	30
High school	39	11
Technical institute	37	11
College	81	22
Postgraduate	3	1
Language Spoken by Participant[^]		
English	113	31
Arabic	314	86
Other [#]	164	45
Language Spoken by Children in Household[^]		
English	145	40
Arabic	215	59
Other [#]	120	33
1 Member of Household Currently Working		
No	156	43
Yes	208	57
Time in the United States (months)		
8–11	33	9
12–23	165	46

	N	%
24–36	162	45
Secondary Migrant		
No	310	87
Yes	48	13

* Includes separated, divorced, and widowed

^ Percentages may sum to more than 100 because participants were allowed to select multiple options

Other languages include: Chaldean, Aramaic, Armenian, Kurdish, Assyrian, Turkish, and French

Reported Health Behaviors and Conditions and General Health Rating, Overall and by Gender (N=366)

Table 2

	Male		Female		Overall		p-value
	N	%	N	%	N	%	
Health Behaviors Smoking Status							
Never	96	45	116	86	212	61	
Former	46	21	9	7	55	16	<0.0001*
Current	73	34	10	7	83	24	
Received Seasonal Flu Vaccine in Past 12 Months							
No	80	39	59	43	139	41	0.4
Yes	126	61	78	57	204	60	
Health Conditions							
Hypertension	61	28	34	24	95	26	0.4
Diabetes	39	18	20	14	59	16	0.3
High cholesterol/lipid profile	83	38	40	28	123	34	0.04*
Angina/myocardial infarction/heart attack	13	6	6	4	19	5	0.5
Asthma	26	12	23	16	49	14	0.3
Liver cirrhosis	5	2	1	0.7	6	2	0.2
Anemia	13	6	19	13	32	9	0.02*
Hepatitis B	2	0.9	0	0	2	0.6	0.2
Hepatitis C	2	0.9	2	1.4	4	1	0.7
Overweight/Obese	26	12	36	25	62	17	0.001*
Physical Health Rating							
Excellent	23	11	5	4	28	8	
Good	63	29	40	28	103	29	0.03*
Fair	86	40	55	39	141	40	
Poor	43	20	42	30	85	24	
Hopkins Symptom Checklist 25							
Anxiety	95	44	87	60	182	50	0.002*
Depression	93	43	84	58	177	49	0.004*

	Male		Female		Overall		p-value
	N	%	N	%	N	%	
Emotional distress, unspecified diagnosis	95	44	87	60	182	50	0.002*
PC-PTSD							
Positive	63	29	49	34	112	31	0.3

^ Percentages may sum to more than 100% due to rounding
* =P<0.5